

## ABSTRACT

The present invention relates to an apparatus and a method for converting power from a power input to a DC output current or voltage, where a first feedback circuit a traditional feedback. The converter type is a resonant DC-DC converter. The scope of the

5 invention is to reach a high effective and fast responding switch mode power supply. This can be achieved with an apparatus or method comprising a second feedback circuit leading a signal from a serial resonance capacitor(s) to a reference input terminal at the control circuit, which second feedback circuit contains a signal depending on the actual change in charge of the resonant capacitor(s).. This means that at high load, a

10 10 very powerful signal will be transmitted through the second feedback at the control circuit that will change the operation of the circuit into a charge mode operation. As the load on the output is reduced, the influence of the second feedback signal will be reduced, and the influence from the charge mode is reduced and the operation mode is changing back into a normal frequency mode of operation. In this way, a much more

15 15 constant gain in the series or series parallel resonant DC-DC converter is achived, and therefore a much better regulated voltage or current of the resonant DC-DC converter can be made.